New species of *Cryptandra* Sm. and *Stenanthemum* Reissek (Rhamnaceae) from northern Australia

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Summary

Bean, A.R. (2004). New species of *Cryptandra* Sm. and *Stenanthemum* Reissek (Rhamnaceae) from northern Australia. *Austrobaileya* 6 (4): 917–940. Seven new species of *Cryptandra*, and one new species of *Stenanthemum* are described and illustrated. One (*C. gemmata*) is from the Northern Territory, four (*C. debilis, C. filiformis, C. pogonoloba, S. argenteum*) are from northern Queensland, and three (*C. ciliata, C. orbicularis, C. rigida*) are from southern Queensland. Full diagnostic descriptions are given for all Queensland taxa and for *C. gemmata*. Distribution maps and an identification key are provided covering all Queensland species. Photographic images are provided for all newly described taxa. *C. armata* is newly recorded for New South Wales.

Key words: Queensland, Northern Territory, *Cryptandra, Stenanthemum,* taxonomy, key, Australian flora, new species, Rhamnaceae.

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Introduction

Cryptandra Sm. and *Stenanthemum* Reissek are endemic Australian genera found mostly in the southern non-arid parts of the continent, but with some representation in the subtropics and tropics. *Cryptandra* comprises about 40 species, and *Stenanthemum* about 30 species (Rye 1995; Walsh & Udovicic 1999).

Taxonomic problems associated with the Tribe Pomaderreae (e.g. *Cryptandra, Stenanthemum, Spyridium* Fenzl and *Trymalium* Fenzl) usually relate to the rather ill-defined distinctions between the genera.

Rye (1995) published numerous new species of both *Cryptandra* and *Stenanthemum* from Western Australia. She did not explicitly state the differences she perceived between these genera, but comparisons reveal that she interpreted *Stenanthemum* to have several to many flowers aggregated into dense head-like clusters surrounded by bracts and leaves, leaf margins incurved (conduplicate in bud), stipules on the upper side of the petiole (often connate), and a glabrous disc; with *Cryptandra* having a 1-flowered inflorescence usually subtended by a leaf, leaf margins recurved to revolute, stipules connate on lower side of petiole, and a densely stellate-hairy disc.

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Walsh & Udovicic (1999) stated that (in Victoria) *Stenanthemum* has a several-flowered head-like inflorescence, sometimes surrounded by 'floral leaves', the individual flowers with 0–2 bracts, and the disc glabrous.

This paper presents new species from Queensland and the Northern Territory, and an identification key for all Queensland taxa. One of the new species clearly belongs in *Stenanthemum*, while the remainder have been placed in *Cryptandra*, although some of the northern species have some features not usually associated with *Cryptandra*.

While I have not had the opportunity to view many of the types of existing species, the respective protologues have been sufficiently detailed to satisfy me that none of the new species are synonymous with them. Indeed, some of the new taxa occur thousands of kilometres from related species and are very distinctive.

All *Cryptandra* and *Stenanthemum* species grow on infertile sandy soils, or sometimes on almost bare rock. Weed species are few on these substrates, and the threat from clearing or grazing is minimal. Only one of the species described in this paper is considered threatened under the criteria developed by the International Union for the Conservation of Nature (IUCN 2001).

Taxonomy

Key to the Queensland species of *Cryptandra* and *Stenanthemum*

1. Lateral branchlets terminating in a spine 2
   Lateral branchlets not terminated by a spine 3

2. Leaf margins strongly recurved to revolute; calyx with simple adpressed hairs throughout ..... **4. C. armata**
   Leaves flat or margins weakly recurved; calyx with stellate hairs throughout ..... **2a. C. amara var. amara**

3. Upper leaf surface with dense stellate hairs 4
   Leaf upper surface glabrous, muricate, or with short simple hairs 5

4. Stipules 2.8–4.4 mm long, thread-like, stellate-hairy ..... **13. C. filiformis**
   Stipules 1.7–2 mm long, broad-based, glabrous ..... **12. C. pogonoloba**

5. Leaf margins revolute, lower surface rarely if ever visible (dried material) 6
   Leaves flat or margins recurved or incurved, lower surface always easily visible 11

6. Calyx tube and calyx lobes thickly covered by tangled woolly hairs ..... **7. C. lanosiflora**
   Calyx tube and lobes glabrous or hairy, but without tangled woolly hairs 7

7. Bract margins conspicuously ciliate (cilia 0.4–0.6 mm long) ..... **10. C. ciliata**
   Bract margins entire or with cilia 0.05–0.2 mm long 8

8. Bracts confined to very base of calyx tube, longest bracts 1.0–1.3 mm long 9
   Bracts covering most or all of calyx tube, longest bracts 2.1–3.8 mm long 10

9. Leaf apex acute to mucronate; style densely hairy; bracts glabrous on outer surface ..... **1. C. debilis**
   Leaf apex obtuse; style glabrous; bracts stellate-hairy on outer surface ..... **3. C. amara var. floribunda**

10. Calyx tube glabrous (except adjacent to lobes); bracts (at anthesis) covering 50–90% of tube ..... **9. C. rigida**
    Calyx tube stellate-hairy throughout; bracts (at anthesis) covering all of calyx tube and part of calyx lobes ..... **8. C. propinqua**

11. Lower leaf surface white, densely hairy 12
    Lower leaf surface green, glabrous or very sparsely hairy 14

12. Leaves 1.8–4 mm long; stipules 0.6–1.1 mm long ..... **6. C. longistaminea**
    Leaves 5–16 mm long; stipules 2–3.8 mm long 13

13. Leaves recurved; inflorescence with conspicuous masses of woolly hair; south Qld ..... **15. Stenanthemum scortechinii**
    Leaves flat or incurved; inflorescence without woolly hairs; north Qld ..... **14. Stenanthemum argenteum**

14. Leaves oblanceolate to obovate, 2–4 times longer than broad; petals protruding 0.4–0.6 mm beyond calyx tube; longest bracts 0.7–0.8 mm long, covering 0–20% of calyx tube ..... **2a. C. amara var. amara**
    Leaves orbicular to reniform, 0.8–1.3 times longer than broad; petals extending 0.8–1.1 mm beyond calyx tube; longest bracts 1.2–1.5 mm long, covering 50–100% of calyx tube ..... **5. C. orbicularis**

1. Cryptandra debilis A.R.Bean **sp. nov.** affinis C. amarae var. floribundae Maiden & Betche, sed stylo longiore pilis densis in dimidio inferiore, calyce longiore, apicibus foliorum acutis et ramulis saepe glabris differens. **Typus:** Queensland. Cook District: Baal Gammon, E of Watsonville, 18 May 1997, *R.L. Jago* 4379 & *B. Wannan* (holo: BRI; iso: NSW).

Cryptandra amara var. (Mt Mulligan J.R. Clarkson 5865) in Bean (2002)

Shrub to 0.3 m high, lateral branchlets 1–8 cm long, not terminating in a spine. Young branchlets often glabrous, sometimes with simple adpressed hairs overlying small stellate hairs. Older branches glabrous. Stipules connate on lower side of petiole, persistent, narrowly triangular, 1.3–1.6 mm long. Leaves in fascicles (2–8 per node), petioles 0.3–0.5 mm long; lamina terete, linear, 2.5–6.5(–12) mm long, 0.5–0.7(–1.0) mm wide, 5–10 times longer than broad, apex acute to mucronate, margins strongly revolute; upper surface green, glabrous; lower surface (rarely visible) white, indumentum dense throughout, with simple hairs overlying small stellate hairs. Inflorescences 1–4 flowered, anthopodia 0.1–0.5 mm long; floral bracts 3–6, broadly ovate to orbicular, 1.1–1.3 mm long, brown, outer surface glabrous, apex obtuse or acute, margin entire or with cilia 0.05–0.1 mm long. Calyx white; calyx tube cylindrical, 1.2–1.5 mm long, indumentum dense throughout, with simple adpressed hairs overlying small stellate hairs, 0–20% of tube obscured by bracts at anthesis; calyx lobes erect, 1.0–1.2 mm long, indumentum dense throughout, with simple adpressed hairs overlying small stellate hairs. Petals hooded, white, protruding 0.4–0.5 mm beyond calyx tube. Disc densely stellate hairy, obscurely 10-lobed. Style 0.6–0.7 mm long, densely hairy on lower half, stigma 3-lobed. Schizocarps ellipsoidal, c. 2.6 mm long, 3-locular, c. 20% inferior, ovary roof with sparse stellate and simple indumentum, disc forming a narrow densely stellate-hairy annulus at the base of the persistent calyx, mericarps dehiscent by a ventral slit. Seeds flattened, elliptical in outline, c. 1.8 mm long excluding aril. Aril white, terminal. **Fig. 1.**

***Selected specimens*: Queensland.** Cook District: near Mt Emerald, SW of Walkamin, Jul 1998, *Bean* 13751 (BRI); Mt Mulligan, 0.5 km SE of dam on summit of Mt, c. 40 km NW of Dimbulah, Apr 1985, *Clarkson* 5865 (BRI); Toys Creek, W of Herberton, Powerline access road, Feb 1996, *Forster* PIF18442 (BRI). North Kennedy District: TR245, Snubby Ck, near Ravenshoe, Apr 1999, *McDonald* 2 (BRI); 11 km NE of Innot Hot Springs, on the Silver Valley road, Jan 2001, *Wannan* 2034 & *Younghusband* (BRI).

***Distribution and habitat*:** Found on the western parts of the Atherton Tableland, and on Mt Mulligan further north (**Map 2**). It grows on granite or sandstone ridges in shrubland.

***Phenology*:** Flowers mostly from April to July, but also in January and February.

***Affinities*:** *Cryptandra debilis* is related to *C. amara* var. *floribunda*, but differs by the often glabrous branchlets (vs. always hairy), bract outer surface glabrous (vs. stellate hairy), acute to mucronate leaf apices, the longer calyx (both tube and lobes), the style 1.1–1.3 mm long with dense hairs on lower half (vs. 0.6–0.7 mm long, glabrous throughout), and the schizocarp only about 20% inferior (vs. 60–70%).

***Etymology*:** From the Latin *debilis*, meaning weak or feeble. This is a reference to the small stature of the plant, compared with other related species.

2. Cryptandra amara Sm. in Rees, Cycl. 10, sect. 2 (1808). **Type:** New South Wales. in the neighbourhood of Port Jackson, undated, *J. White s.n.* (holo: LINN, *n.v.*, microfiche 294.1).

There are two varieties treated separately in the key to species.

2a. Cryptandra amara var. **amara**

Cryptandra amara var. *longiflora* F.Muell. ex Maiden & Betche, Proc. Linn. Soc. New South Wales 28: 905 (1904). **Type:** not cited.

Cryptandra sp. (Thulimbah C. Schindler 6) in Bean (2002)

Cryptandra sp. 3, in Briggs & Leigh (1996)

Shrub 0.3–0.9 m high, lateral branchlets 0.5–2 cm long, sometimes terminating in a spine. Young branchlets with small stellate hairs only. Older branches glabrescent. Stipules connate

Fig. 1. ***Cryptandra debilis***. A. flowering branchlet (*McDonald* 2); B. side view of flower, showing predominantly simple hairs on calyx and very short bracts (*McDonald* 2).

on lower side of petiole, persistent, triangular, 0.9–1.3 mm long. Leaves only rarely in fascicles (1(–3) per node), petioles 0.2–0.4 mm long; lamina oblanceolate or obovate, 2.2–6.0 mm long, 0.8–2.3 mm wide, 2–4 times longer than broad, apex obtuse, lamina flat or margins recurved; upper surface green, glabrous; lower surface green, glabrous or with a few simple hairs on midrib. Inflorescences 1- flowered, anthopodia 0.4–1.2 mm long; floral bracts 5–7, orbicular, inner ones 0.7–0.8 mm long, brown, outer surface glabrous, apex obtuse, margin with cilia c. 0.05 mm long. Calyx white to creamy; calyx tube cylindrical to urceolate, 0.7–1.5 mm long, with dense small stellate hairs throughout, 0–20% of tube obscured by bracts; calyx lobes erect to spreading, 0.9–1.3 mm long, with the same indumentum as the tube. Petals hooded, white, protruding 0.4–0.6 mm beyond calyx tube. Disc densely stellate hairy, obscurely 10-lobed. Style 0.7–0.9 mm long, glabrous, stigma entire or 3-lobed. Schizocarps ellipsoidal, 3-locular, c. 2.4 mm long, 30–40% inferior, with ovary roof sparsely stellate-hairy, disc forming a narrow densely stellate-hairy annulus at the base of the persistent calyx, mericarps dehiscent by a ventral slit. Seeds not seen.

***Selected specimens*: Queensland.** Darling Downs District: c. 1 km ENE of Gambubal Forest Station, E of Warwick, Oct 1996, *Bean* 10987 (BRI, MEL, NSW); Bald Rock Creek, Mt Norman fire trail, Girraween N.P., Aug 1995, *Forster* PIF17609 & *Figg* (BRI, CANB, MEL); Rhumbalara Railway crossing, Fletcher Lane, Fletcher, Aug 1996, *Grimshaw* PG2544 & *Bean* (BRI). Moreton District: Double Peak, Mt Ballow area, McPherson Range, Sep 1990, *Forster* PIF7421 & *Leiper* (BRI, CANB, K, MEL, NSW). Leichhardt District: Boyd Creek, SF46, c. 70 km W of Taroom, Sep 2002, *Bean* 19263 (BRI).

***Distribution and habitat*:** In Queensland, *C. amara* var. *amara* is known mainly from the 'Granite Belt' surrounding the town of Stanthorpe, but also occurs disjunctly at Mt Ballow, and near Taroom (**Map 3**). It inhabits rocky ridges and mountaintops on sandstone, granite or other acidic substrates.

***Phenology*:** Flowers from August to October; fruits in October.

***Notes*:** This taxon sometimes has spinose lateral branchlets, and hence it can be confused with *C. armata.*

3. Cryptandra amara var. **floribunda** Maiden & Betche, Proc. Linn. Soc. New South Wales 29: 736 (1905). **Types:** Howell, July 1904, *J.L. Boorman* (syn: BRI!, NSW?); Stanthorpe, Queensland, July 1904, *J.L. Boorman* (syn: NSW?).

Shrub to 0.6 m high, lateral branchlets 1–4 cm long, not terminating in a spine. Young branchlets with simple adpressed hairs overlying small stellate hairs. Older branches glabrescent. Stipules connate on lower side of petiole, persistent, narrowly triangular, 1.0–1.3 mm long. Leaves often in fascicles (1–8 per node), petioles 0.2–0.3 mm long; lamina terete, linear, 1.8–3.5 mm long, 0.4–0.6 mm wide, 3–8 times longer than broad, apex obtuse, margins strongly revolute; upper surface green, glabrous, sometimes muricate; lower surface (rarely visible) white, indumentum dense throughout, with simple hairs overlying small stellate hairs. Inflorescences 1–3 flowered, anthopodia 0.3–0.5 mm long; floral bracts 4–6, broadly ovate to orbicular, 1.0–1.2 mm long, brown, outer surface stellate hairy, apex obtuse, margin entire or with cilia 0.05–0.1 mm long. Calyx white; calyx tube campanulate, 0.8–1.0 mm long, indumentum dense throughout, with simple adpressed hairs overlying small stellate hairs, 0–20% of tube obscured by bracts at anthesis; calyx lobes erect, 0.7–0.9 mm long, indumentum dense throughout, with simple adpressed hairs overlying small stellate hairs. Petals hooded, white, protruding 0.3–0.5 mm beyond calyx tube. Disc densely stellate hairy, obscurely 10-lobed. Style 0.6–0.7 mm long, glabrous throughout, stigma entire. Schizocarps ellipsoidal, 2.0–2.6 mm long, 3-locular, 60–70% inferior, ovary roof with sparse stellate indumentum, disc forming a narrow densely stellate-hairy annulus at the base of the persistent calyx, mericarps dehiscent by a ventral slit. Seeds flattened, elliptical in outline, c. 1.2 mm long excluding aril. Aril white, terminal.

***Selected specimens*: Queensland.** Darling Downs District: Portion 90, Wyberba, Aug 1995, *Forster* 17587 & *Figg* (BRI); Ballandean, Oct 1933, *White* 9397 (BRI).

***Distribution and habitat*:** Widespread in New South Wales, but in Queensland it is confined to the 'Granite Belt', around Stanthorpe (**Map 2**). It grows on granitic hills and ridges with shallow soil.

***Phenology*:** Flowers are recorded from August to October.

***Notes*:** This taxon is amply distinct from *C. amara* var. *amara*, and should be accorded species rank. Walsh & Udovicic (1999) foreshadowed this, and suggested that *C. tomentosa* Lindl. may be the appropriate name.

4. Cryptandra armata C.T.White & W.D.Francis, Proc. Roy. Soc. Queensland 33: 153 (1922). **Type:** Queensland. Darling Downs District: Barakula, a few miles north of Chinchilla, July 1919, *J.E. Young s.n.* (holo: BRI).

Shrub to 1.5 m high, lateral branchlets 0.5–1.5 mm long, terminating in a spine. Young branchlets with simple adpressed hairs overlying small stellate hairs. Older branches glabrescent. Stipules connate on lower side of petiole, persistent, narrowly triangular, 0.9–1.4 mm long. Leaves often in fascicles (1–5 per node), petioles 0.3–0.5 mm long; lamina oblanceolate, obovate or spathulate, 1.4–5.2 mm long, 0.4–1.4 mm wide, 2–5 times longer than broad, apex obtuse or acute, margins recurved; upper surface green, glabrous; lower surface green, glabrous or with a few simple hairs on midrib. Inflorescences 1-(2-) flowered, anthopodia 0.5–1 mm long; floral bracts several, orbicular, 1.3–1.6 mm long, brown, outer surface glabrous, apex obtuse, margin with cilia 0.05–0.15 mm long. Calyx white to creamy; calyx tube cylindrical to campanulate, 2.5–3 mm long, with dense adpressed simple hairs overlying small stellate hairs, 15–25% of tube obscured by bracts at anthesis; calyx lobes erect to spreading, 1–1.6 mm long, with the same indumentum as the tube. Petals hooded, white, protruding 1–1.2 mm beyond calyx tube. Disc densely stellate hairy. Style 1.5–2.8 mm long, with dense stellate hairs on lower third; stigma entire or 3-lobed. Schizocarps ellipsoidal, 3-locular, 3–3.5 mm long, ovary superior or 10% inferior, ovary roof with sparse stellate indumentum, disc forming an annulus of dense stellate hairs at base of the persistent calyx, mericarps dehiscent by a ventral slit. Seeds flattened, elliptical in outline, c. 2.3 mm long excluding aril. Aril white, terminal. **Fig. 2.**

***Selected specimens*: Queensland.** Port Curtis District: Castletower N.P., east slopes Many Peaks Range, Feb 1995, *Forster* PIF16331 (BRI); Castletower N.P., site 297, Oct 1995, *Thompson* MIR87 & *Price* (BRI). Maranoa District: "Boxleigh", S of Surat, Aug 2001, *Bean* 17765 (BRI); Chesterton Range N.P., c. 15 km E of Wineba house, Apr 1998, *Dollery s.n.* (BRI). Burnett District: on SF130, 2 km NW of Nantglyn, Sep 1989, *Forster* 5738 & *Bean* (BRI); northern boundary of SF132, 35 km SSW of Mundubbera, Jul 1997, *Halford* Q3305 & *Holland* (BRI); "Narayan", Bull Paddock, Jul 1968, *McHarg* H529 (BRI). Darling Downs District: 3.7 km along Booroondoo Rd, S of Moonie, Sep 1997, *Bean* 12368 (BRI); 11.6 km along Boondandilla Rd, W of Milmerran, Oct 1998, *Bean* 13903 (BRI); Spinifex Heath, Wondul Range, Aug 1995, *Forster* 17508 & *Figg* (BRI); SF132, c. 8.5 km WNW of Limevale, Oct 1994, *Sparshott* KMS404 & *Bean* (BRI). **New South Wales.** North Western Slopes: Severn River, 16.1 km from Bukkulla, c. 21 km SE of Ashford, Oct 1990, *Coveny* 14582 (BRI, NSW).

***Distribution and habitat*:** *C. armata* is found as far north as Gladstone, west to Morven and south to Ashford in New South Wales (**Map 2**). It grows in sandy soil (sometimes skeletal), on granite or sandstone substrate.

***Phenology*:** It flowers from July to September, and fruits from September to February.

***Notes*:** *C. armata* is the only consistently spinose species in northern Australia. The specimen from near Ashford (Coveny 14582) is the first record of the species from New South Wales.

5. Cryptandra orbicularis A.R. Bean **sp. nov.** affinis C. longistamineae F.Muell., sed folia orbicularia usque reniformibus pagina inferiore glabra vel glabriuscula, calycis tubo pilis sparsis usque densis praedito et petalis brevibus differens. **Typus:** Queensland. Leichhardt District: Expedition National Park, NW of Taroom, Robinson Creek headwaters, 14 September 2000, *P.I. Forster* PIF26173, *R. Booth & F. Carter* (holo: BRI; iso: MEL, NSW).

Cryptandra sp. (Isla Gorge P. Sharpe 627) in Bean (2002)

Shrub 0.3–0.9 m high, lateral branchlets 1–5 cm long, not terminating in a spine. Young branchlets with small white stellate hairs only, or sometimes also with a few simple patent to adpressed hairs. Older branches glabrescent. Stipules connate on lower side of petiole, persistent, narrowly triangular, 0.9–1.2 mm long. Leaves usually solitary, but occasionally in fascicles of up to 4, orbicular, reniform, or

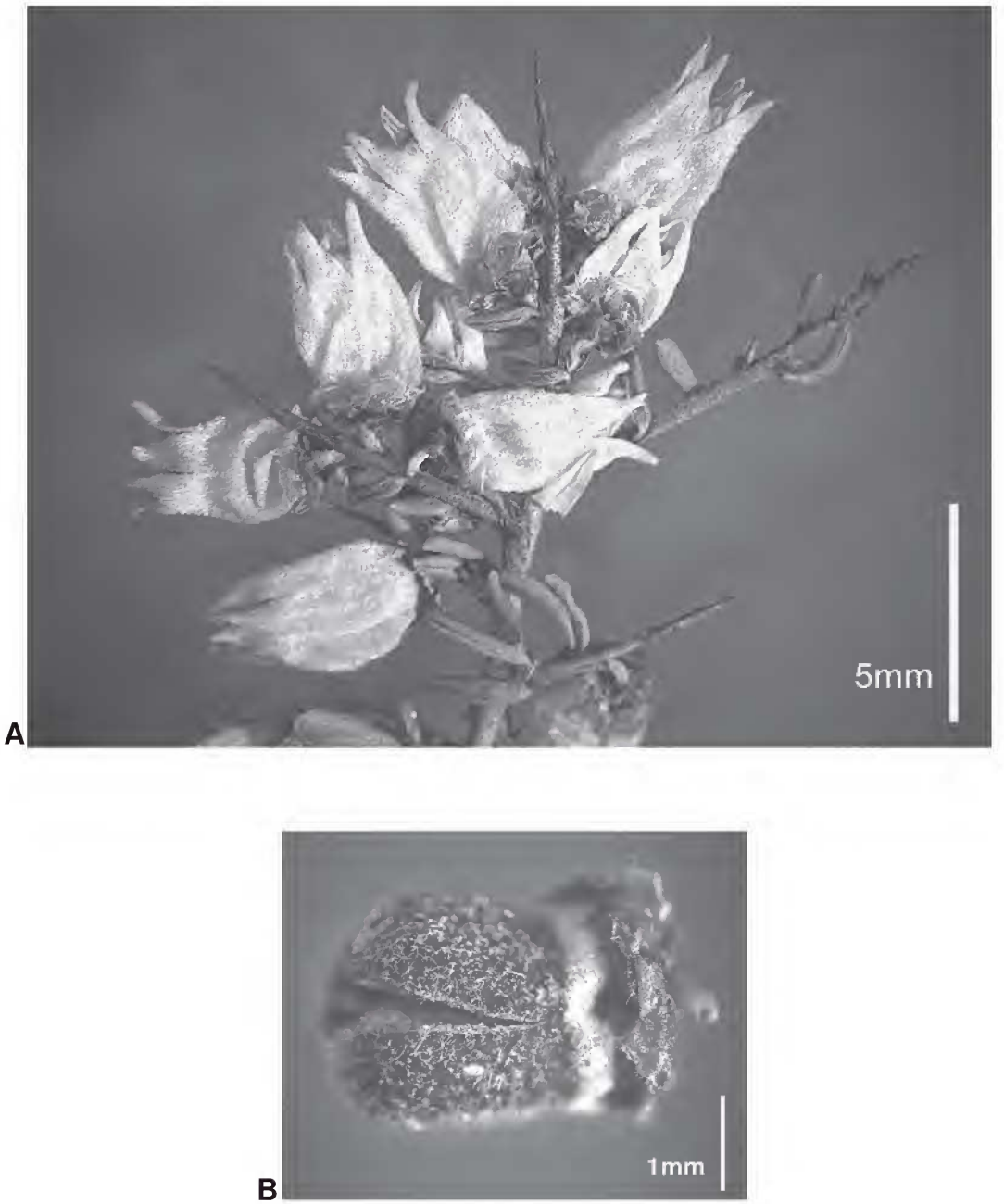

Fig. 2. ***Cryptandra armata***. A. flowering branchlets with spinose tips (*Bean* 17765); B. mature schizocarp (*Forster* 5738 & *Bean*).

broadly obovate, 1.3–2.5 mm long, 1.3–2.2 mm wide, 0.8–1.3 times longer than broad, apex obtuse, lamina flat or margins recurved; upper surface green, glabrous; lower surface green, glabrous or with a few simple hairs on midrib. Inflorescences 1- flowered, anthopodia 0.3–0.6 mm long; floral bracts several, elliptical, inner ones 1.2–1.5 mm long, brown, outer surface stellate-hairy, apex obtuse, margin with cilia 0.05–0.15 mm long. Calyx white to creamy; calyx tube cylindrical to campanulate, 0.9–1.1 mm long, with sparse to dense small stellate hairs throughout, or sometimes almost glabrous, 50–100% of tube obscured by bracts; calyx lobes spreading, 1.3–1.5 mm long, with a mixture of adpressed simple hairs and small stellate hairs. Petals hooded, white, protruding 0.8–1.1 mm beyond calyx tube. Disc densely stellate hairy. Style 1.3–2.0 mm long, glabrous throughout, distinctly 3-lobed. Mature schizocarps not seen. Immature schizocarps ellipsoidal, 50% inferior, ovary roof sparsely stellate hairy, disc forming a narrow densely stellate-hairy annulus at the base of the persistent calyx. Seeds not seen. **Fig. 3.**

***Selected specimens*: Queensland.** Leichhardt District: Precipice N.P., catchment of Precipice Ck, Sep 1996, *Forster* PIF19741 (BRI, MEL); 38 km NE of Taroom, 'Spring Creek' station, Oct 1996, *Halford* Q3181 (BRI); Isla Gorge, c. 28 km SW of Theodore, Aug 1973, *Sharpe* 627 & *Hockings* (BRI).

***Distribution and habitat*:** *C. orbicularis* is confined to south-eastern Queensland, between Cracow and Rolleston (**Map 2**). It grows on sandstone ridges in shrubby eucalypt woodland.

***Phenology*:** Flowers recorded from August to October.

***Affinities*:** *Cryptandra orbicularis* is clearly related to *C. longistaminea*, but differs by the leaves orbicular to reniform (vs. elliptical to obovate), the lower leaf surface green, glabrous or with a few simple hairs on midrib (vs. white, very densely hairy throughout); calyx tube with sparse to dense stellate hairs (vs. glabrous); calyx lobes with a mixture of adpressed simple hairs and small stellate hairs (vs. stellate hairy throughout, sometimes with a few simple adpressed hairs); style 1.3–2.0 mm long (vs. 2.0–2.3 mm long); and petals protruding 0.8–1.1 mm beyond calyx tube (vs. 1.4–1.8 mm beyond calyx tube).

***Etymology*:** the epithet refers to the frequently orbicular leaves in this species.

6. Cryptandra longistaminea F.Muell., Fragm. 3: 64 (1862). **Type:** Severn River, New England, undated, *C. Stuart s.n.* (holo: ?MEL, *n.v.*).

Shrub to 1 m high, lateral branchlets 1–5 cm long, not terminating in a spine. Young branchlets with small white stellate hairs only, each hair c. 0.1 mm diameter. Older branches glabrescent. Stipules connate on lower side of petiole, persistent, narrowly triangular, 0.6–1.1 mm long. Leaves usually solitary, but occasionally in fascicles of up to 4, petioles 0.2–0.6 mm long; lamina elliptical to obovate, 1.8–4.0 mm long, 0.9–1.7 mm wide, 1.5–2.5 times longer than broad, apex acute, margins recurved; upper surface green, glabrous; lower surface white, densely stellate-hairy, with a few erect simple hairs on midrib. Inflorescences 1- flowered, anthopodia 0.3–0.8 mm long; floral bracts several, elliptical, to 1.0–1.2 mm long, brown, outer surface glabrous, apex obtuse, margin with cilia 0.05–0.1 mm long. Calyx white to creamy; calyx tube cylindrical to campanulate, 1.0–1.3 mm long, glabrous, 10–70% of tube obscured by bracts; calyx lobes erect to spreading, 1.7–2.0 mm long, with a thin layer of small stellate hairs throughout, and sometimes with a few adpressed simple hairs at the apex. Petals hooded, white, protruding 1.4–1.8 mm beyond calyx tube. Disc densely stellate hairy. Style 2.0–2.3 mm long, glabrous throughout, stigma distinctly trifid. Mature schizocarps not seen. Immature schizocarps ellipsoidal, c. 50% inferior, ovary roof with sparse stellate indumentum, disc forming an annulus of dense stellate hairs at the base of the persistent calyx. Seeds not seen.

***Selected specimens*: Queensland.** Port Curtis District: near tributary of East Boyne River, Many Peaks Range, Jun 1995, *Thompson* CAL325 & *Turpin* (BRI). Darling Downs District: 9 km W of Bringalily Forestry lookout tower, Sep 1992, *Forster* PIF11639 & *Machin* (BRI, MEL). Burnett District: 7.8 km W of Cynthia, S of Monto, Sep 1999, *Bean* 15313 & *McDonald* (BRI); about 13.5 km SSE of Allies Creek, Jul 1998, *Pollock* ABP663 & *Dean* (BRI). Moreton District: 1 km E of Swanbank Power station, Nov 1988, *Bostock & Forster s.n.* (BRI); Buchanans Fort, Christmas Creek area, Sep 1995, *Forster* PIF17675 & *Leiper* (BRI, CANB).

Fig. 3. ***Cryptandra orbicularis***. A. flowering branchlet (*Pollock* 1261); B. flowers, showing the bracts, recurved calyx lobes and relatively long petals (*Pollock* 1261).

***Distribution and habitat*:** Found in south-eastern Queensland, south from about Gladstone (**Map 3**). It is widespread in New South Wales.

***Phenology*:** Flowers recorded from June to September; fruits in November.

***Notes*:** Some specimens from the Burnett District are atypical, because of the dense simple hairs on the upper leaf surface. It is not yet known whether these specimens represent an unnamed taxon.

7. Cryptandra lanosiflora F.Muell., Fragm. 3: 65 (1862). **Type:** Severn River, New England, undated, *C. Stuart s.n.* (syn: ?MEL, *n.v.*); Mt Mitchell towards the Clarence river, undated, *H. Beckler* (syn: ?MEL, *n.v.*).

Shrub to 0.6 m high, lateral branchlets 1–3 cm long, not terminating in a spine. Young branchlets with simple adpressed hairs overlying small stellate hairs. Older branches glabrescent. Stipules connate on lower side of petiole, persistent, narrowly triangular, 0.9–1.8 mm long. Leaves in fascicles (2–7 per node), petioles 0.2–0.5 mm long; lamina terete, ellipsoidal, 1.3–3.2 mm long, 0.6–0.8 mm wide, 2–5 times longer than broad, apex obtuse or acute, margins strongly revolute; upper surface green, glabrous, muricate, or with short simple hairs; lower surface (rarely visible) white, indumentum dense throughout, with simple hairs overlying small stellate hairs. Inflorescences 1- flowered, anthopodia 0.3–0.5 mm long; floral bracts several, orbicular, 1.8–2.1 mm long, brown, outer surface glabrous or with a few simple hairs, apex obtuse, margin with cilia 0.1–0.15 mm long. Calyx white; calyx tube ovoid, 1.5–1.8 mm long, with dense tangled simple hairs, 50–75% of tube obscured by bracts at anthesis; calyx lobes erect, 1.2–1.3 mm long, with the same indumentum as the tube. Petals hooded, white, protruding 0–0.3 mm beyond calyx tube. Disc densely stellate hairy, obscurely 10-lobed. Style 0.6–0.8 mm long, glabrous throughout, stigma entire or 3-lobed. Schizocarps obovoid, 3-locular, 2.3–2.6 mm long, 60–70% inferior, ovary roof with sparse stellate indumentum, disc forming a narrow densely stellate-hairy annulus at the base of the persistent calyx, mericarps dehiscent by a ventral slit. Seeds flattened, elliptical in outline, 1.2–1.4 mm long excluding aril. Aril white, terminal.

***Selected specimens*: Queensland.** Darling Downs District: upper reaches Bald Rock Creek, Girraween N.P., Sep 1993, *Forster* 13833 & *Bean* (BRI); Mt Jibbenbar, Sundown N.P., 34 km WSW of Stanthorpe, Sep 1996, *Halford* Q2949 (BRI); Wyberba, Bald Rock Creek, Oct 1963, *Pedley* 1549 (BRI).

***Distribution and habitat*:** In Queensland, confined to the Stanthorpe area. It also occurs on the northern tablelands of N.S.W. It grows on granite hills in eucalypt woodland.

***Phenology*:** Flowers and fruits recorded for September and October.

***Notes*:** *C. lanosiflora* is immediately distinguishable by the dense white woolly hairs on the calyx.

8. Cryptandra propinqua Fenzl in Endl., Enum. Pl. 23 (1837). **Type:** "New South Wales", *A. Cunningham* (?W, *n.v.*).

Shrub 0.6–1 m high, lateral branchlets 1–3 cm long, not terminating in a spine. Young branchlets with simple adpressed hairs overlying small stellate hairs. Older branches glabrescent. Stipules connate on lower side of petiole, persistent, narrowly triangular, 1.0–1.5 mm long. Leaves often in fascicles (1–5 per node), petioles 0.2–0.3 mm long; lamina terete, ellipsoidal, 1.2–3.5 mm long, 0.4–0.7 mm wide, 2.5–7 times longer than broad, apex obtuse, margins strongly revolute; upper surface green, glabrous, sometimes muricate; lower surface (rarely visible) white, indumentum dense throughout, with simple hairs overlying small stellate hairs. Inflorescences 1- flowered, anthopodia 0.3–0.6 mm long; floral bracts c. 15, ovate to elliptical, inner ones 2.9–3.8 mm long, brown, outer surface glabrous, apex acute, margin with cilia 0.1–0.2 mm long. Calyx white; calyx tube campanulate, 2.0–2.3 mm long, indumentum sparse throughout, with small stellate hairs only, 100% of tube obscured by bracts at anthesis; calyx lobes erect, 1.8–2.7 mm long, indumentum dense throughout, with simple adpressed hairs overlying small stellate hairs, lobes partially obscured by bracts at anthesis. Petals hooded, white, protruding 0.2–0.5 mm beyond calyx tube. Disc densely stellate hairy, obscurely 10-lobed. Style 1.0–3.3 mm long, glabrous throughout or stellate-hairy on lower half, stigma 3-lobed. Schizocarps broadly

ellipsoidal, 2.8–4 mm long, 3-locular, ovary roof with sparse stellate indumentum, disc forming a narrow densely stellate-hairy annulus at the base of the persistent calyx, mericarps dehiscent by a ventral slit. Seeds not seen.

***Selected specimens*: Queensland.** Warrego District: near Bouden's Dam, Chesterton Range N.P., Aug 2001, *Dollery* 280 (BRI).Maranoa District: Mt Moffatt N.P., fire monitoring site 5, May 1997, *Addicott* MM45 (BRI). Leichhardt District: Planet Downs Pastoral holding, adjacent to Planet Creek, Mar 1998, *Brushe* JB1518 (BRI). Burnett District: S.F. 132, 9 km ESE of Brovinia, Jun 1997, *Bean* 12037 (BRI). Darling Downs District: Cecil Plains, Jun 1962, *Hockings s.n.* (BRI).

***Distribution and habitat*:** Widespread from Springsure to Inglewood, and west to Morven (**Map 1**). It is also widespread in New South Wales. It grows on sandy soils derived from sandstone.

***Phenology*:** Flowers recorded from June to September, with one record in December.

9. Cryptandra rigida A.R.Bean **sp. nov.** affinis C. propinquae Fenzl sed ramulis pilis stellatis tantum praeditis, habitu rigido invenusto, bracteis floralibus obtusis interioribus sub anthesi totum calycis tubi haud tegentibus et calycis tubo maximam partem glabro differens. **Typus:** Queensland. Burnett District: "Cooya", west of junction of Barambah and Boonara Creeks, 17 July 1996, *P. Grimshaw* 2486 & *R. Price* (holo: BRI; iso: MEL).

Cryptandra sp. (Ngungun L.S. Smith 13973) in Bean (2002).

Shrub 0.4–1 m high, lateral branchlets 1–2.5 cm long, not terminating in a spine. Young branchlets with small stellate hairs only. Older branches glabrescent. Stipules connate on lower side of petiole, persistent, narrowly triangular, 0.9–1.6 mm long. Leaves in fascicles (2–6 per node), petioles 0.2–0.5 mm long; lamina terete, ellipsoidal to lanceolate, 1.7–3.0 mm long, 0.4–0.9 mm wide, 2.5–6 times longer than broad, apex obtuse, margins strongly revolute; upper surface green, glabrous; lower surface (rarely visible) white, indumentum dense throughout, with simple hairs overlying small stellate hairs. Inflorescences 1- flowered, anthopodia 0.3–0.5 mm long; floral bracts c. 10, elliptical, inner ones 2.1–2.3 mm long, brown, outer surface glabrous, apex obtuse, margin with cilia 0.1–0.15 mm long. Calyx white; calyx tube cylindrical, 1.8–2.3 mm long, glabrous except for a few stellate hairs near the lobes, 50–90% of tube obscured by bracts at anthesis; calyx lobes erect, 1.6–2.0 mm long, indumentum rather sparse throughout, predominantly small stellate hairs with a few simple adpressed hairs. Petals hooded, white, protruding 0.5–0.8 mm beyond calyx tube. Disc densely stellate hairy, obscurely lobed. Style 2.5–2.7 mm long, glabrous throughout, stigma entire. Schizocarps broadly ellipsoid, 2.3–2.6 mm long, 3-locular, 50% inferior, ovary roof with sparse stellate indumentum, disc forming a narrow densely stellate-hairy annulus at the base of the persistent calyx, mericarps dehiscent by a ventral slit. Seeds flattened, elliptical in outline, 1.4–1.5 mm long excluding aril. Aril white, terminal. **Fig. 4.**

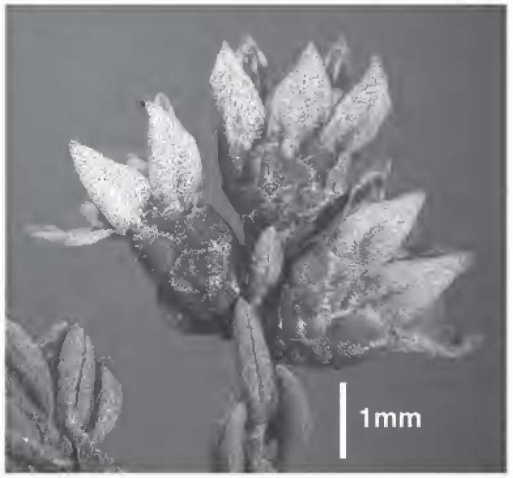

Fig. 4. ***Cryptandra rigida***. A. flowering branchlet (*Grimshaw* 2486 & *Price*).

***Selected specimens*: Queensland.** Burnett District: Mt Lorna, 3 km W of Toondahra HS, Aug 1988, *Forster* 4637 (BRI, CANB); Campbell Creek, W of Mt Brian, Nov 1996, *Grimshaw* 2621 & Turpin (BRI). Wide Bay District: 1.5 km SSW of Biggenden Bluff, Mt Walsh N.P., Sep 2002, *Bean* 19229 (BRI) Moreton District: Ngungun, NE corner below summit basin, Jul 1968, *Smith* 13973 (BRI).

***Distribution and habitat*:** Known from several rhyolitic or granitic mountains in the far south east of Queensland (**Map 1**).

***Phenology*:** Flowers recorded from July to September; fruits in November.

***Affinities*:** *Cryptandra rigida* is clearly related to *C. propinqua*, from which it differs by the branchlets having stellate hairs only (vs. simple + stellate); the rigid unattractive habit; the obtuse inner floral bracts 2.1–2.3 mm long, not covering whole of calyx tube at anthesis (vs. acute inner floral bracts 2.9–3.8 mm long, covering all of calyx tube and partly covering calyx lobes); the mostly glabrous calyx tube; and the predominantly stellate indumentum of the calyx lobes.

***Etymology*:** the epithet refers to the rigid branchlets, that make field encounters with the species somewhat unpleasant.

10. Cryptandra ciliata A.R. Bean **sp. nov.** affinis C. propinquae Fenzl sed folia conspicue fasciculatis 4–11 per nodum, bracteis pallidis brunneis obtusis, marginibus bracteae ciliis 0.4–0.6 mm praeditis, et calycis tubo glabro differens. **Typus:** Queensland. Leichhardt District: 28 km from Cracow on Nathan Gorge road, 15 July 1990, *P.I. Forster* PIF7037 (holo: BRI; iso: AD, CANB, K, MEL, NSW, *distribuendi*).

Cryptandra sp. (Gurulmundi G.W. Althofer 8418) in Bean (2002)

Cryptandra sp. 1, in Briggs & Leigh (1996)

Shrub to 0.5 m high, lateral branchlets 10–50 mm long, not terminating in a spine. Young branchlets with simple adpressed hairs overlying small stellate hairs. Older branches glabrescent. Stipules connate on lower side of petiole, persistent, triangular with slender apex, 1.3–1.8 mm long. Leaves in fascicles (usually 4–11 per fascicle), petioles 0.1–0.2 mm long; lamina terete, linear, 1.7–2.6 mm long, 0.4–0.5 mm wide, 4–5.5 times longer than broad, apex obtuse, margins strongly revolute; upper surface green, glabrous, sometimes muricate; lower surface (rarely visible) white, with dense stellate hairs and simple hairs. Inflorescences 1-flowered, anthopodia 0.5–0.8 mm long; floral bracts c. 13, obovate, inner ones 1.7–2.1 mm long, pale brown, apex obtuse, margin with cilia 0.4–0.6 mm long. Calyx white to brown; calyx tube campanulate, 1.8–2.0 mm long, glabrous except adjacent to calyx lobes, 100% of tube obscured by bracts at anthesis; calyx lobes erect to spreading, 1.4–1.7 mm long, with dense white simple hairs. Petals hooded, white, protruding 0.5–0.6 mm beyond calyx tube. Disc densely stellate hairy, obscurely 10-lobed. Style 0.7–1.2 mm long, glabrous throughout, stigma entire. Schizocarps ellipsoidal, 3-locular, 2.4–2.9 mm long, 50–65% inferior, ovary roof with sparse stellate indumentum, disc forming an annulus of dense stellate hairs at the base of the persistent calyx, mericarps dehiscent by a ventral slit. Seeds flattened, oblong in outline, 1.8–1.9 mm long excluding aril. Aril white, terminal. **Fig. 5.**

***Selected specimens*:** **Queensland.** Leichhardt District: Cracow–Taroom road, S of "Fairyland", Sep 1990, *Bean* 2302 (BRI); Gwambegwine, Ruined Castle Creek catchment, Sep 1996, *Forster* 19653 (BRI); 16 km SSW of Cracow township, Jul 1963, *Lazarides* 6948 (BRI).

***Distribution and habitat*:** *C. ciliata* is sporadically distributed from Barakula State Forest to west of Theodore (**Map 1**). It grows on sandstone ridges and slopes in eucalypt woodland.

***Phenology*:** flowers and fruits recorded from July to September.

***Affinities*:** *Cryptandra ciliata* is allied to *C. propinqua* but differs the conspicuously fasciculate leaves with 4–11 per node, the pale brown obtuse bracts up to 2.1 mm long (vs. dark brown, acute, 2.9–3.8 mm long for *C. propinqua*), bract cilia 0.4–0.6 mm long (vs. 0.1–0.2 mm long), calyx tube 1.4–1.7 mm long, glabrous (vs. 1.8–2.7 mm long, stellate hairy) and calyx lobes with simple adpressed hairs (vs. simple and stellate).

***Etymology*:** the epithet refers to the conspicuously ciliate bracts, which serve to distinguish it from other Queensland species.

11. Cryptandra gemmata A.R. Bean **sp. nov.** Folia 0.8–1.1 mm longa, inflorescentiae terminales cymosaeque, 3–5-florae, alabastra in axillis bractearum plurimarum, bracteae apex aristatus, discus floralis annularis dense pilosus, mericarpia dehiscentia. **Typus:** Northern Territory. Arnhem Land, 19 km E of Jabiru, 18 April 1989, *R.W. Johnson* 4552 (holo: BRI; iso: AD, BISH, CONN, DNA, MEL, NSW, *distribuendi*).

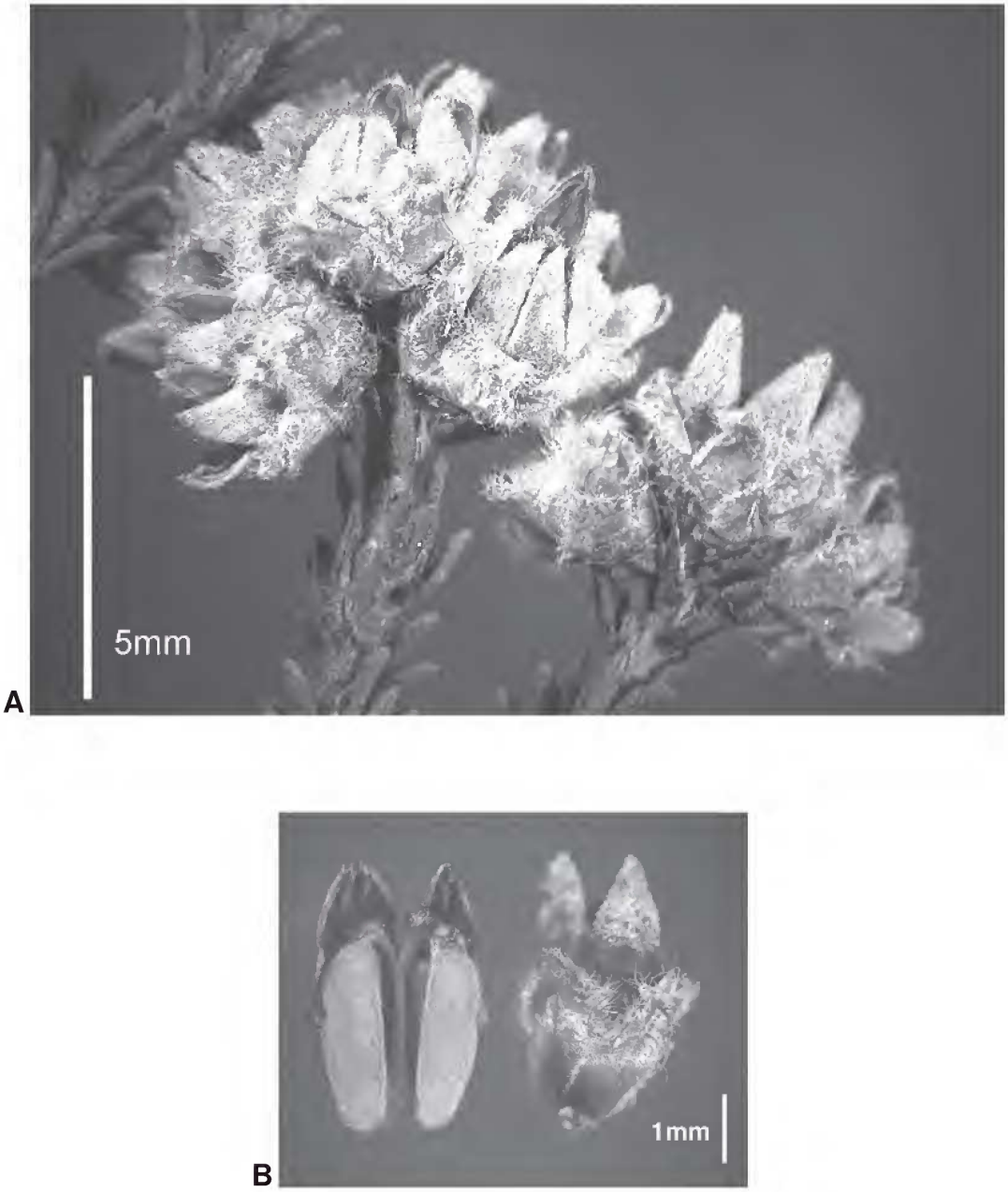

Fig. 5. ***Cryptandra ciliata***. A. flowering branchlet, showing revolute leaves and ciliate bracts (*Forster* 7037); B. schizocarp, showing persistent bracts and calyx, and dehiscent mericarps (*Forster* 19668).

Shrub 0.2–0.3 m high, lateral branchlets 1–3 cm long, not terminating in a spine. Young branchlets with small stellate hairs only. Older branches glabrescent. Stipules connate on lower side of petiole, persistent, narrowly triangular with slender apex, 1.0–1.3 mm long. Leaves in fascicles (3–9 per node), petioles absent; lamina terete, ellipsoidal, 0.8–1.1 mm long, 0.3–0.4 mm wide, 2.5–3.5 times longer than broad, apex obtuse, margins revolute; upper surface green, glabrous, muricate; lower surface (rarely visible) white, densely hairy. Inflorescences cymose, 3–5 flowered, clustered at very end of branchlets; anthopodia 0–0.2 mm long, floral bracts several (3 or 4 fertile bracts and 2 sterile), elliptical but with an aristate apex, 1.9–2.2 mm long, brown, outer surface glabrous, margin entire or with tiny cilia <0.1 mm long. Calyx white to creamy; calyx tube cylindrical to urceolate, 1.6–1.7 mm long, with dense small stellate hairs and scattered adpressed simple hairs, 50–100% of tube obscured by bracts at anthesis; calyx lobes erect, 0.8–1.0 mm long, with the same indumentum as the tube. Petals hooded, white, protruding 0.5–0.6 mm beyond calyx tube. Disc densely stellate hairy, obscurely lobed. Style 1.2–1.6 mm long, glabrous throughout, stigma entire. Schizocarps obovoid, 3-locular, 2.5–2.9 mm long, 60–70% inferior, ovary roof sparsely stellate hairy, disc forming a narrow densely stellate-hairy annulus at the base of the persistent calyx, mericarps dehiscent by a ventral slit. Seeds flattened, elliptical in outline, 1.8–2.0 mm long excluding aril. Aril white, terminal. **Fig. 6.**

***Additional specimen*: Northern Territory.** Arnhem Land, 19 km E of Jabiru, Apr 1989, *Johnson* 4618 (AD, BRI, DNA, MEL, NSW).

***Distribution and habitat*:** Known only from the far north of the Northern Territory, near Jabiru. It inhabits shrubland on sandstone pavement, with little or no soil.

***Phenology*:** flowers and fruits recorded for April.

***Affinities*:** *Cryptandra gemmata* is a distinctive species with no obvious allies. The leaves are only 0.8–1.1 mm long, and the bracts have an aristate apex. Most significantly, the inflorescences appear to be truly terminal, and cymose. Each flower is surrounded by several bracts, of which only two are sterile; the remainder subtend flower buds and have the potential to form new flowers. Hence it is common to see various aged buds, flowers and fruits on the same inflorescence.

***Etymology*:** The epithet is from the Latin *gemmatus*, meaning 'provided with buds, budded'. This refers to the development of buds around the existing flowers and fruits on the inflorescences.

12. Cryptandra pogonoloba A.R.Bean **sp. nov.** ab omnibus aliis speciebus queenslandicis stipulis in pagina superiore petiolorum positis, bracteis floralibus apice aristato ornatis et pilis longis simplicibus erectis ad apicem calycis lobi differens. **Typus:** Queensland. Cook District: Bulleringa National Park, 80 km north-west of Mt Surprise, Red River area, 23 April 1998, *P.I. Forster* PIF22542 & *R. Booth* (holo: BRI; iso: DNA, K, MEL, NSW, QRS, *distribuendi*).

Shrub 0.5–1 m high, lateral branchlets 0.3–1 cm long, not terminating in a spine. Young branchlets with small stellate hairs only. Older branches glabrescent. Stipules overlapping but not connate on upper side of petiole, persistent, triangular to ovate, with slender apex, 1.7–2.0 mm long. Leaves not in fascicles (1 per node), petioles 0.3–0.9 mm long; lamina linear to oblanceolate, 4.0–8.5 mm long, 0.8–1.2 mm wide, 4.5–9 times longer than broad, apex obtuse or acute, margins revolute; upper surface grey, densely hairy, with stellate hairs or short simple hairs; lower surface white, with dense stellate hairs throughout and some simple hairs along midrib. Inflorescences 1- flowered, anthopodia absent; floral bracts several, identical to stipules but larger, inner ones 2.0–2.3 mm long, brown, glabrous except for a few simple hairs along midrib, apex aristate, margin with cilia 0.3–0.6 mm long. Calyx white to creamy; calyx tube ovoid to ellipsoid, 0.7–0.8 mm long, with dense small stellate hairs throughout, bract apices 70–100% length of tube, only base of tube obscured; calyx lobes erect, 1.0–1.2 mm long, with dense stellate hairs throughout and long erect simple hairs, especially towards apex. Petals hooded, white, protruding 0.2–0.4 mm beyond calyx tube. Disc

Fig. 6. ***Cryptandra gemmata***. A. branchlet, showing fasciculate leaves and prominent stipules (*Johnson* 4552); B. schizocarp, showing persistent calyx and dehiscent mericarps (*Johnson* 4552).

Fig. 7. ***Cryptandra pogonoloba***. A. flowering branchlet (*Forster* 22542); B. dehisced mericarp, showing long erect hairs on calyx, and seed (*Forster* 22608).

densely stellate hairy, lobing obscure. Style 0.6–0.8 mm long, glabrous, stigma entire. Schizocarps ellipsoidal, 3-locular, 2.1–2.4 mm long, 60–70% inferior, ovary roof densely stellate-hairy, disc forming a narrow densely stellate-hairy annulus at the base of the persistent calyx, mericarps dehiscent by a ventral slit. Seeds flattened, elliptical in outline, 1.6–1.9 mm long excluding aril. Aril white, terminal. **Fig. 7.**

Selected specimens: **Queensland.** Cook District: 54 km along Bulimba Station road, off Chillagoe–Wrotham Park road, Jun 1991, *Forster* PIF8438 (AD, BRI, MEL); Bulleringa N.P., 80 km NW of Mt Surprise, Apr 1998, *Forster* PIF22608 & *Booth* (BRI); ditto, *Forster* PIF22642 & *Booth* (BRI, DNA, MEL); ditto, Forster PIF22689 & *Booth* (BRI, DNA, MEL, NSW, QRS).

***Distribution and habitat*:** *Cryptandra pogonoloba* is confined to north Queensland, in the area north of Georgetown and west of Chillagoe (**Map 1**). It grows on sandstone ridges and slopes in eucalypt woodland.

***Phenology*:** Flowers and fruits are recorded for April and June.

***Affinities*:** *C. pogonoloba* differs from all other Queensland species by the stipules placed on the upper side of the petiole, the floral bracts with an aristate apex and the long erect simple hairs at the apex of the calyx lobes. The upper leaf surface is densely stellate-hairy, a feature shared only by *C. filiformis*.

***Etymology*:** the epithet refers to the conspicuous erect simple hairs on the apex of the calyx lobes (Gk. *pogon* - beard, and *lobus* - lobe).

13. Cryptandra filiformis A.R.Bean **sp. nov.** ab omnibus aliis speciebus a Queenslandia cognitis inflorescentia cymosa, absentia bractearum floralium et stipulis filiformibus differens. **Typus:** Queensland. Cook District: Mt Carbine to Maytown, 46 km along Whites Creek road, 20 April 2002, *A.R. Bean* 18766 & *K.R. McDonald* (holo: BRI; iso: CANB, MEL, NSW).

Shrub 0.5–0.7 m high, without distinct lateral branchlets, not spinose. Young branchlets with small stellate hairs only. Older branches stellate hairy. Stipules connate on lower side of petiole, persistent, thread-like, 2.8–4.4 mm long, stellate-hairy throughout. Leaves not in fascicles (1 per node), petioles 0.5–0.8 mm long; lamina narrowly elliptic to narrowly lanceolate, 7.5–30 mm long, 0.9–3.5 mm wide, 5–9 times longer than broad, apex acute, margins recurved to revolute; upper surface grey, with dense stellate hairs only; lower surface white, with dense stellate hairs only. Inflorescences 2–11- flowered, cymose; anthopodia 0.7–1.2 mm long; floral bracts absent. Calyx white to creamy; calyx tube cylindrical to urceolate, 1.0–1.3 mm long, with dense small stellate hairs throughout; calyx lobes erect, 1.1–1.3 mm long, with dense stellate hairs throughout. Petals hooded, white, protruding 0.4–0.5 mm beyond calyx tube. Disc densely stellate hairy, 5-lobed. Style 1.6–1.8 mm long, stellate hairy on proximal one-third, otherwise glabrous, stigma entire. Schizocarps obovoid, 3-locular, 3.0–3.8 mm long, 60–70% inferior, ovary roof stellate-hairy, disc forming a narrow densely stellate-hairy annulus at the base of the persistent calyx, mericarps dehiscent by a ventral slit. Seeds flattened, ellipsoidal, 2.2–2.4 mm long excluding aril. Aril white, terminal. **Fig. 8.**

***Selected specimens*:** **Queensland.** Cook District: 23 km E of Forsayth on road to Einasleigh, Oct 2000, *Addicott* EPA851 & *Newton* (BRI); near Groganville, N of Chillagoe, Apr 2002, *Bean* 18754 & *McDonald* (BRI); 26 km W of Einasleigh on road to Forsayth, on top of Newcastle Range, Apr 1992, *Halford* Q957 (BRI).

***Distribution and habitat*:** *C. filiformis* is known from two areas of north Queensland about 250 kilometres apart - on the Newcastle Range (W of Einasleigh), and in the Maytown–Groganville area (**Map 3**). These populations are apparently disjunct. It grows on ridges and plateaux on metamorphics or lateritised sandstone.

***Phenology*:** Flowers are recorded for April; fruits in October.

***Affinities*:** *Cryptandra filiformis* differs from all other Queensland species by the thread-like stipules, the complete absence of simple hairs, the cymose inflorescence, and the absence of floral bracts. It seems most closely related to *C. intratropica* W.Fitzg., a species from the Kimberley region of Western Australia, which also has strictly stellate indumentum,

Fig. 8. ***Cryptandra filiformis***. A. flowering branchlet, showing revolute leaves and filiform stipules (*Bean* 18766); B. half-lower, showing stellate-hairy disc and glabrous style (*Bean* 18766).

rudimentary bracts and a contracted cymose inflorescence. While these characteristics are unusual in *Cryptandra*, both *C. filiformis* and *C. intratropica* display enough typical *Cryptandra* character states (e.g. the annular stellate-hairy disc, the conspicuous calyx tube and the dehiscent mericarps) for them to be regarded as members of *Cryptandra*.

***Etymology*:** the epithet refers to the slender thread-like stipules.

14. Stenanthemum argenteum A.R.Bean **sp. nov**. affinitate ad *S. leucophractum* (Schltdl.) Reissek, sed statura majore, partibus hornotinis argenteis, foliis longioribus, bracteis floralibus aristatis et calycis tubo pilos et simplices et stellatos ferenti differens. **Typus:** Queensland. Cook District: The Pepperpot, Mount Mulligan, c. 40 km NW of Dimbulah, 31 May 1985, *J.R. Clarkson* 5949 (holo: BRI; iso: L, MEL, MO, NSW, *distribuendi*).

Cryptandra sp. (Mt Mulligan J.R. Clarkson 5949) in Bean (2002).

Cryptandra sp. 2, in Briggs & Leigh (1996).

Shrub c. 2 m high, without distinct lateral branchlets, not spinose. Young branchlets with simple adpressed hairs only. Older branches remaining hairy. Stipules on upper side of petiole, not connate but sometimes overlapping, persistent, very narrowly triangular with slender apex, 2.0–3.1 mm long. Leaves solitary, not in fascicles, petioles 2–3 mm long; lamina oblanceolate to obovate, 7.5–16 mm long, 2.0–4.9 mm wide, 2.5–4.5 times longer than broad, apex acute or obtuse, lamina flat or margins incurved; upper surface green, glabrous; lower surface white, with dense adpressed simple hairs throughout. Inflorescences c. 7- flowered, in a terminal head, surrounded by c. 3 bi-aristate stipule-like bracts, and 1 or 2 spathulate floral leaves that are densely hairy on both surfaces. Flowers without anthopodia; floral bracts 2 or 3, elliptical, 2.7–3.0 mm long, brown, outer surface glabrous except along midrib, apex obtuse, margin with cilia 0.2–0.25 mm long. Calyx white to creamy; calyx tube cylindrical to urceolate, 2.5–3.0 mm long, with mixture of long simple hairs and minute stellate hairs, 80–100% of tube obscured by bracts; calyx lobes erect, 1.9–2.0 mm long, with long simple adpressed hairs throughout. Petals hooded, white, protruding 1.1–1.4 mm beyond calyx tube. Disc not apparent. Style c. 3.3 mm long, glabrous throughout, stigma entire. Schizocarps and seeds not seen. **Fig. 9.**

***Additional specimen*: Queensland.** Cook District: Mt Mulligan, c. 40 km NW of Dimbulah, Apr 1985, *Clarkson* 5765 (BRI).

***Distribution and habitat*:** Known only from Mt Mulligan, in north-eastern Queensland (**Map 1**). It grows on sandstone pavement in heathland.

***Phenology*:** Flowers are recorded for May.

***Notes*:** *S. argenteum* is similar to *S. leucophractum*. Both species have petiolate, obovate leaves, stipules united above the petiole, a head-like inflorescence with 1 or 2 specialised floral leaves, and the disc obscure and glabrous. However, *S. argenteum* differs by the greater stature, the silvery new growth, the longer leaves, the aristate floral bracts, and the calyx tube with a mixture of simple and stellate hairs.

***Conservation status*:** *S. argenteum* is currently known only from Mt Mulligan. It is threatened by its small population size and restricted area of occupancy. Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU D1+2).

***Etymology*:** The epithet refers to the silvery branchlets and leaves (L. *argenteus* - silvery).

15. Stenanthemum scortechinii (F.Muell.) Maiden & Betche, Proc. Linn. Soc. New South Wales 27: 57 (1902); *Cryptandra scortechinii* F.Muell., Australas. Chem. Druggist 6 (69): 72 (1884). **Type**: on the Severn [River], undated, *B. Scortechini* (holo: ?MEL, *n.v.*).

Shrub 0.3–1 m high, lateral branchlets 1–8 cm long, not spinose. Young branchlets with dense stellate hairs only. Older branches remaining hairy. Stipules on upper side of petiole, not connate but overlapping, persistent, triangular, 2.2–3.8 mm long. Leaves solitary, not in fascicles, petioles 1–1.9 mm long; lamina lanceolate, 5–14 mm long, 1.7–3.9 mm wide, 3–6 times longer than broad, apex acute or mucronate, margins recurved to revolute; upper

A

B

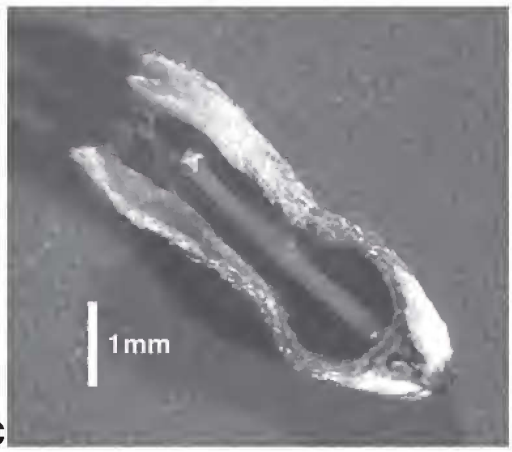

Fig. 9. ***Stenanthemum argenteum***. A. flowering branchlet showing inflorescence with a single floral leaf (*Clarkson* 5949); B. flowering branchlet, showing stipules and silvery lower leaf surface (*Clarkson* 5949); C. half-flower, showing glabrous style and lack of obvious disc (*Clarkson* 5949).

surface green, glabrous; lower surface white, with dense stellate hairs throughout and scattered simple hairs along midrib. Inflorescences compound, each terminal 'head' comprising 5–6 shortly pedunculate clusters of c. 6 flowers, each surrounded by very dense mass of simple long woolly hairs. Clusters subtended by 2 outer + 3 or 4 inner, orbicular bracts, up to 5 mm long, brown, outer surface glabrous except for simple and stellate hairs along midrib, apex acute, margin entire. Calyx white; calyx tube cylindrical, 0.9–1.0 mm long, glabrous; individual flowers not subtended by bracts; calyx lobes erect, 0.9–1.0 mm long, with long simple hairs and small stellate hairs. Petals hooded, white, protruding c. 0.6 mm beyond calyx tube. Disc not apparent. Style 0.8–1.2 mm long, glabrous throughout, stigma entire. Schizocarps ellipsoidal, 3-locular, 2.7–3.0 mm long, 90% inferior, ovary roof stellate-hairy, mericarps indehiscent, chartaceous. Seeds flattened, ellipsoidal, 1.9–2.0 mm long. Aril absent.

***Selected specimens*: Queensland.** Darling Downs District: upper reaches of Bald Rock Creek, Girraween N.P., Sep 1993, *Bean* 6357 & *Forster* (BRI, CANB, MEL); Lyra, Nov 1959, *Blake* 21092 (BRI, CANB); Stanthorpe, Jul 1904, *Boorman s.n.* (BRI, NSW); 9 km NW of Ballandean, Murphys Ck, Portion 91 Tartini Pty Ltd, Dec 1994, *Halford* Q2363 (BRI); slopes near summit of Mt Norman, Sep 1977, *Powell & Armstrong s.n.* (BRI, NSW).

***Distribution and habitat*:** In Queensland, *S. scortechinii* is confined to the Stanthorpe district (**Map 1**), but is moderately widespread in New South Wales. It grows on lower slopes of hills in coarse sandy soils derived from granite, in eucalypt forest with a heathy understorey.

***Phenology*:** Flowers and fruits recorded between September and December.

***Notes*:** *S. scortechinii* has chartaceous, indehiscent mericarps. All other *Stenanthemum* species have dehiscent mericarps. Indehiscent mericarps are a regular feature of both *Trymalium* and *Spyridium*, but in those genera, the mericarps are very hard, thick and rugose.

Acknowledgements

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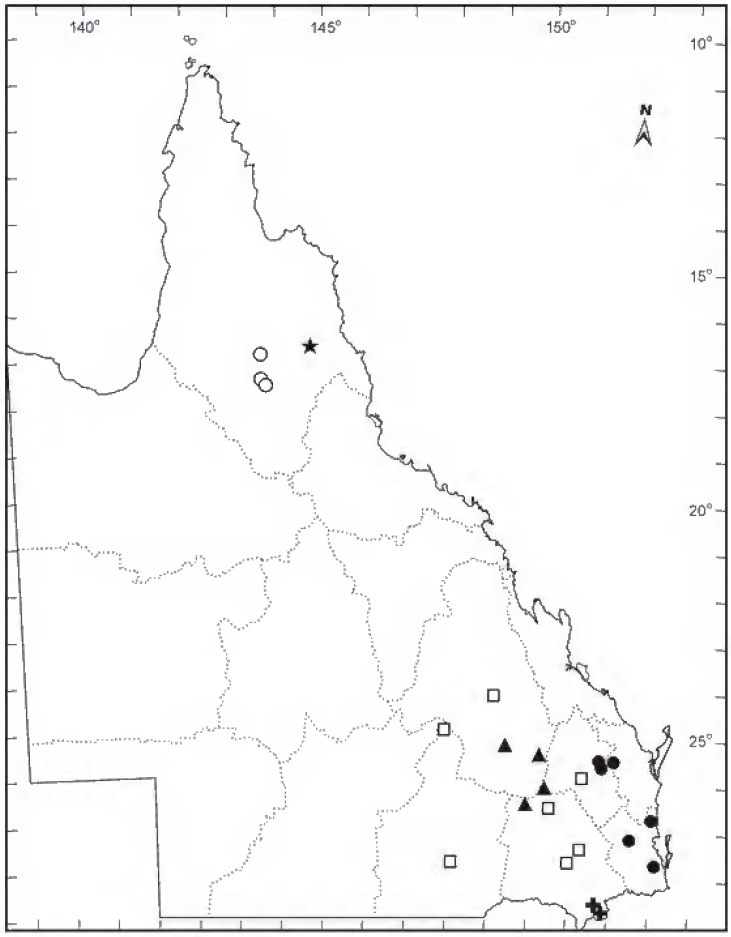
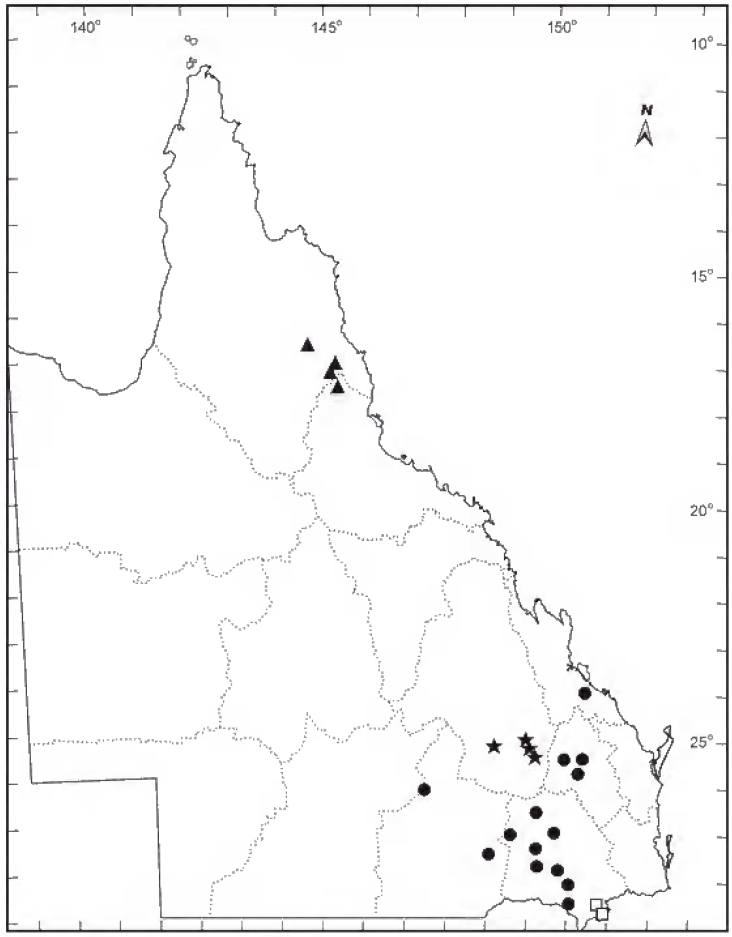
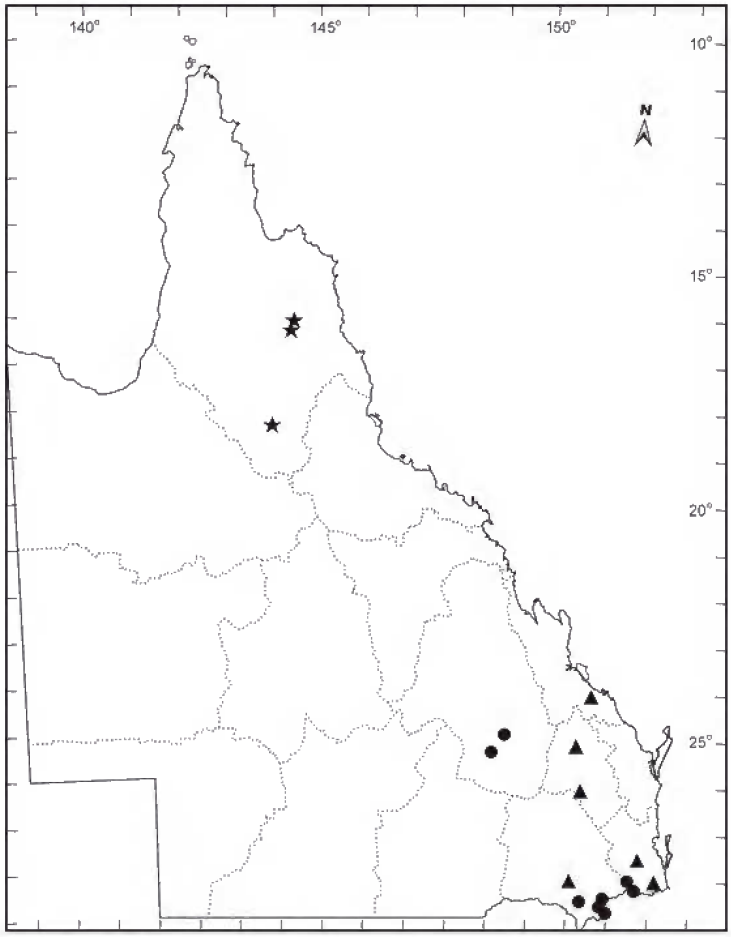


Map 1. Distribution of *Cryptandra propinqua* □ , *C. rigida* ● , *C. ciliata* ▲ , *C. pogonoloba* ○ , *Stenanthemum argenteum* ★ , *S. scortechinii* ✚ .



Map 2. Distribution of *Cryptandra debilis* ▲ , *C. amara* var. *floribunda* □ , *C. armata* ● , *C. orbicularis* ★ .



Map3. Distribution of *Cryptandra amara* var. *amara* ● , *C. longistaminea* ▲ , *C. filiformis* ★ .